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ABSTRACT

This literature review surveys research on academic achievement in the middle grades to answer the following questions: What is the current state of middle-grades education? What led to the reform of middle-grades education? What does the research say about educational practices that support academic achievement in the middle grades? The review focuses on research associated with improving student achievement and presents a list of best practices for improving achievement for all middle-grades students. The literature showed that promoting achievement in the middle grades has more in common with successful strategies applied at other grade levels than not. The researchers call this the "middle grades paradox." Specifically, the review examines the following topics: (1) the current state of middle-grades education; (2) middle-grades education reform; (3) what the evidence says about middle-grades achievement, which includes discussions of curriculum, academic climate, engagement, parental involvement, school size, classroom structure, teacher quality, and the transition to high school; and (4) encouraging links among research, practice, and strategies. (Contains 223 references.) (WFA)

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Academic Achievement in the Middle Grades: What Does Research Tell Us?

A Review of the Literature

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Foreword

The 16 Southern Regional Education Board states have committed their educational systems to reaching every student through a series of 12 goals designed to lead the nation in educational achievement.[1] The goals focus on three themes: getting all students ready — for first grade, for high school, and for postsecondary education and beyond; closing achievement gaps among groups of students; and providing a unified system of education. One of the 12 goals speaks specifically to the middle grades: "Achievement in the middle grades for all groups of students exceeds national averages and performance gaps are closed."

Progress toward this goal will be measured by:

- Percentages of all groups of students meeting state academic standards in reading, writing, mathematics, science and social studies increase annually to reach 100 percent.
- Achievement gaps are closed in meeting state standards for all groups of middle grades students.
- Percentages of eighth-grade students who meet the proficient achievement level on the National Assessment of Educational Progress are raised to above the national averages in reading, mathematics and science. All students meet the basic achievement level.
- The percentages of all groups of students who successfully complete Algebra I by the end of eighth grade increase. All other students complete Algebra I in grade nine.

Many aspects of the middle grades need to change. To accomplish the SREB middle grades goals and fulfill the mission of preparing all students for demanding high school studies, middle grades educators need to know what works in raising student achievement.

The *No Child Left Behind Act of 2001* requires schools to use scientifically-based research to improve student achievement. Scientifically-based research provides evidence on how and why a program or practice works, its effect on student achievement, and its success in various settings and situations. SREB and MPR Associates Inc. have prepared this review of what research tells us works in the middle grades. The purpose of the review is to help schools gather research-based evidence regarding links between reform strategies, student achievement and other student outcomes.

When we began this review, we expected that the middle grades literature would provide strong evidence of successful strategies for improving student achievement. Instead we found a modest base of research to guide middle grades policy and practices. Based on current research, the best practices for improving achievement for all middle grades students include:

- Providing an accelerated and rich core curriculum consisting of topics in algebra and geometry, laboratory-based science, weekly writing in all classes, and extensive reading of all types of materials in *all* classes for *all* students;
- Setting high academic expectations and creating a supportive climate of encouragement and extra time and help for students who need it;
- Engaging students in challenging, hands-on assignments that require them to practice new skills, that incorporate their interests, and that relate to life outside the school;
- Providing families with information about school and their student's progress, and encouraging discussions between parents and students about educational and career goals;
- Grouping students to help them connect what they are learning across the curriculum and linking them to a caring adult within the school;
- Coordinating curriculum, sharing data among schools that send and receive students, and preparing students for success in high school; and
- Assigning highly qualified teachers to every classroom.

Gene Bottoms
Senior Vice President
Southern Regional Education Board

[1] *Goals for Education: Challenge to Lead* is available at www.sreb.org.

Introduction i

Current State of Middle Grades Education 1

Middle Grades Education Reform 2

Middle Grades Achievement: What the Evidence Says 3

- Curriculum 4
- Academic Climate 5
- Engagement 7
- Parental Involvement 8
- School Size and Classroom Structure 8
- Transition to High School 9
- Teacher Quality 10

Encouraging Links among Research, Practices and Strategies 11

Bibliography 13

Acknowledgments 19

Introduction

In their sequel to the Carnegie Corporation's influential 1989 report *Turning Points: Preparing American Youth for the 21st Century*, Anthony Jackson and Gayle Davis (2000) portray middle grades reform as an extraordinary adventure. Over the last decade, they write,

> significant progress has been made in the journey to provide young adolescents with a developmentally responsive education. However, we are only halfway up the mountain, with the most important and perhaps most difficult part of the climb remaining. (p. 5)

After 10 years, Jackson and Davis remain confident in their mission; they may have reason to be optimistic. The first large-scale effort to study the academic impact of *Turning Points* shows a strong association between this approach and increased student achievement. Based on data collected over several years from nearly 100 Illinois middle grades schools, Robert Felner and colleagues (1997) found that the more fully a school practiced the model, the higher its students scored on language arts assessments. Felner's work has been updated and validated in Michigan and in Arkansas, and in Louisiana and Mississippi by Steve Mertens and Nancy Flowers at the University of Illinois (The Center for Prevention, Research and Development, 1999a; 1999b; 1999c; 1998). This research represents a first step along a very long path that may lead to proven strategies for enhancing student achievement. Making a solid, research-driven case for any particular approach to middle grades reform will require a great deal more evidence, from a large number of studies, conducted in many contexts.

This literature review surveys contemporary scholarship on academic achievement in the middle grades to answer the following questions:

What is the current state of middle grades education?

What led to the reform of middle grades education?

What does research tell us about educational practices that support academic achievement in the middle grades?

This review focuses on research associated with improving student achievement. We expected to find strong evidence of successful strategies in the middle grades, but this was not the case and we had to expand our research to all grade levels. Contrary to our assumption of what drives much of the middle grades research and reform literature, **we found that promoting achievement in the middle grades has more in common with successful strategies applied at other grade levels than not**. We describe our search for evidence as the middle grades paradox.

This is neither the first nor the most extensive review of the research literature, but it offers some insight into the current state of research on student achievement in the middle grades, as well as the conceptual dilemmas that frame it. (In addition to Jackson & Davis, 2000, see, for example, Wheelock, 1998; Totten et al., 1996; and CDE, 1987).

Current State of Middle Grades Education

Schools

Today there are more than 14,000 public middle grades schools in the United States. Middle schools represent more than half of this number, and junior high schools account for roughly one-third if grades seven-to-eight schools (which are sometimes treated as a separate category) are included. K-to-eight systems and other configurations account for the remaining schools. This represents a significant change from the 1970s, when junior high schools made up as much as three-fourths of the total number of middle grades schools (NMSA, 2000; Middle Level Leadership Center, 2000).

Student Achievement

What we know about middle grades academic achievement is largely drawn from the National Assessment of Educational Progress (NAEP). Their data indicate troublesome trends. NAEP data indicate that eighth-grade reading proficiency rose slightly from the 1970s to the 1980s, and it remained more or less steady through the end of the 1990s. In mathematics, eighth-grade students have gained about two-thirds of a grade level since the 1970s. In science, achievement has fluctuated, declining in the 1970s then increasing in the 1980s and declining again in the 1990s. However, while overall student achievement seems to have risen somewhat in recent decades, the middle grades are not necessarily responsible for that gain. For instance, it has been argued that the value added by grades five to eight has actually declined over time in mathematics and science and has remained stagnant in reading (Haycock and Ames, 2000). **That is, while eighth-grade student scores have improved, this improvement might be attributable to better student performance in fourth grade and below rather than to anything that is happening in the middle grades.**

The NAEP data also show that minority eighth-grade students made progress in the 1970s and early 1980s and that there was some narrowing of a longstanding ethnic achievement gap at this grade level. However, the gap widened again in the 1990s and continues to do so with dire consequences — not only for minority students but especially for low-income students. Low-income and minority students disproportionately attend schools that lack strong curricula and well-prepared teachers (Mizell, 2000; Cooney, 1998; Schmidt et al, 1996). **Schools serving low-income and minority students are less likely to offer extensive remedial programs, advanced courses, or instruction that promotes active or higher-order learning** (MacIver and Epstein, 1990).

A recent SREB-directed study of middle grades student achievement in 14 Southern states (Cooney, 2000) documented similar patterns. Not only did the data show a wide gap between the performance of students in the highest and lowest quartiles, but they also showed a wide gap between the performance of White and African-American students in reading, mathematics and science. Students performing in the lowest quartile tend to receive less academic guidance than their high-achieving peers and face lower expectations from their teachers. Their teachers tend to score lower on various indicators of pedagogical effectiveness and personal efficacy than teachers of students performing at higher levels.

The Third International Math and Science Study (TIMSS) also sheds some light on middle grades achievement in general. The TIMSS report uses a much narrower range of subject areas than does NAEP. In spite of persistent challenges to the TIMSS study's methodology and findings (e.g., Wang, 2001; Bracey, 2000), it provokes much concern about middle grades student achievement — particularly in mathematics. The key findings are well-known: In mathematics and science, U.S. fourth-graders reached a higher achievement level than their peers in almost every other developed nation. By the eighth grade, U.S. students had slipped to the middle of the list of nations and under-performed even students from several less-developed nations.

Staffing

At present, 23 states require secondary subject-area licensure for middle grades teachers. However, seven of these states accept an elementary license in the middle grades as long as the teacher has a subject-area concentration (Education Week, 2002). Forty-three states and the District of Columbia now have some form of specialized teaching credential for middle grades teaching (Gaskill, 2002). Yet only 21 of the 43 states require middle grades teachers to have this credential. Many states grant overlapping licenses covering grades K to eight or seven to 12; consequently, middle grades teachers usually hold either elementary or secondary licenses. There are very few teacher preparation programs dedicated specifically to middle grades instruction, and most of them are located in a handful of states (McEwin, 1992).

The lack of subject area expertise is widespread in middle grades schools. **Almost 30 percent of seventh- and eighth-grade teachers assigned to teach mathematics or science do not have the knowledge to do so** (National Forum to Accelerate Middle-Grades Reform, 2002). The minimum degree or coursework required for an initial license varies from state to state. **In general, few states require middle grades teachers to achieve the same level of grade-specific competencies as their elementary or secondary counterparts.** This fact impacts the nature of the teaching and learning experience in the middle grades — an issue of substantial importance in the context of improving achievement.

Middle Grades Education Reform

Typically the story of middle grades reform begins in the early years of the 20th century when a number of trends combined to produce a dramatic expansion and redesign of school districts throughout the United States (McKay, 1995; Clark and Clark, 1994; Lewis, 1993; Hechinger, 1993; Lounsbury, 1992).

Doubtless national demographic patterns played a key role in these reforms. In response to high immigration rates, policy leaders advocated the creation of *more* schools and at the same time advocated that students remain in those schools beyond the elementary years. They hoped that this policy would help assimilate the country's new immigrants. The impetus for middle grades reform came also from the emerging field of psychology, as psychologists declared *adolescence* a distinct phase of life, requiring an educational model all of its own. At the same time, advances in public record-keeping made tracking student progress easier and thus exposed high dropout rates, that in turn emphasized the need for a smoother transition from elementary to high school.

Whatever its source, the resulting junior high school movement quickly gained momentum. As Lounsbury (1992) relates, the first junior high schools appeared around 1910, and the number grew to nearly 900 in 1925. "[B]y 1934, there were 1,950; by 1960, the number reached 5,000; and by 1970, the number ... peaked at close to 8,000" (p.7). In short, the tripartite organization of schooling — elementary and secondary schools separated by an intermediate level — gradually became the norm in most parts of the country.

Junior high schools — whether made up of grades seven to nine, seven to eight or another variant — succeeded in establishing themselves, but they also had many detractors. **Beginning in the 1960s, critics argued that junior high schools lacked a clear educational mission of their own. More often than not, they simply adopted the teaching methods and disciplinary structures of high schools.** While these schools claimed to serve as a bridge from elementary to high school studies, few of them actually did. By and large, the junior high curriculum stood apart, neither building upon the work of the early grades nor preparing students for the demands of high school.

Most influential, however (but not accurate, some have argued; e.g., Beane, 2001; Lounsbury, 1992), was the charge that the junior high school model ignored the emotional and social pressures typical of early adolescence. Though psychologists may have contributed to the original design of the junior high school, these schools in fact did not meet students' developmental needs — not in teaching methods, climate, size, structure, architecture, community relations, advising systems or hiring patterns.

It is this criticism and the related call for "developmental responsiveness" that has been the driving force of the contemporary generation of middle grades reformers from the 1970s to the present. The last three decades have seen the invention and the ascent — at least in name — of the "middle school," a designation that has come to replace the "junior high school" in most parts of the country.

Not only does this re-naming symbolize a rejection of the second-class status implicit in the word "junior," but it has also come to symbolize a whole new professional orientation — or a "movement," as advocates call it. In 1973 the National Middle Schools Association — which today claims some 30,000 members — was founded. Its conferences, publications and position statements give the NMSA movement a forum in which to define not only its research and policy agendas but also the professional identity of its members. For example, the association's 1982 manifesto *This We Believe* — updated most recently in 1995 — outlines the essential features of a "developmentally responsive middle-level school:"

> Educators committed to young adolescents; a shared vision; high expectations for all; an adult advocate for every student; family and community partnerships; and a positive school climate.

However, several organizations have come to rival the NMSA as sources of policy debate and research in middle grades education. Most notably, the Carnegie Corporation's *Turning Points* reports (1989, 2000) have joined *This We Believe* as the most widely cited position statements in middle grades reform. Also of note are the various publications of the Edna McConnell Clark Foundation's Program for Student Achievement (e.g., Wheelock, 1995, 1999; Brown, 2002); the Southern Regional Education Board's (SREB) four reports examining student performance, curriculum and instruction, and teaching in the middle grades[2]; and the National Association of Secondary School Principals' *An Agenda for Excellence at the Middle Level* (1985), among others.

[2] *Education's Weak Link: Student Performance in the Middle Grades.* 1998; *Raising the Bar in the Middle Grades: Readiness for Success.* 1998; *Improving Teaching in the Middle Grades: Higher Standards for Students Aren't Enough.* 1998; and *Leading the Way: State Actions to Improve Student Achievement in the Middle Grades.* 1999.

These documents acknowledge the need for *responsiveness* to the emotional and social needs of early adolescents. They also articulate another — and perhaps competing agenda — for middle grades reform. For instance, *Turning Points 2000* offers a blunt challenge to the priorities named in *This We Believe:* "Let us be clear. The main purpose of middle grades education is to promote young adolescents' *intellectual* development" (p. 10, our italics). To primarily emphasize students' emotional and interpersonal concerns, say the authors, is to make a strategic mistake, lending ammunition to those who see the middle grades as a wasteland of good intentions but low standards:

> [C]ritics of middle grades schools will … continue to assert — wrongly — that middle grades educators do not believe their students are capable of significant intellectual achievement or that they believe it is more important to help students successfully traverse the emotional vicissitudes inherent in this developmental stage. (p. 11)

Similarly, this statement from SREB's *Making Middle Grades Matter: A Planning Guide for School Improvement* (2000) addresses past programs:

> These programs have been unsuccessful for the most part because they did not focus clearly on raising student achievement and strengthening the academic core curriculum and classroom practices. (p. 1)

At present, we can only guess how this challenge may alter the direction of middle grades reform. Perhaps the middle grades movement has begun to chart a new course. For example, the National Forum to Accelerate Middle Grades Reform, an umbrella group created in 1997, is dedicated to reconciling these differences. The Forum — composed of representatives from the NMSA, Carnegie and other organizations — states that it will help schools become both "academically excellent" *and* "developmentally responsive" as well as "socially equitable," an objective that no one disputes.

Middle Grades Achievement: What the Evidence Says

For two reasons this review examines *only* the research addressing middle grades academic achievement. First, while much of the existing middle level research has focused on the developmental characteristics and needs of adolescents, this research has been thoroughly reviewed elsewhere (Klein, Urdan and Medrich, 1998), and we see no reason to repeat that effort here.

Second, SREB and other researchers and practitioners are calling for greater emphasis on identifying strategies that support academic achievement, and this is an opportune time to review what is known in the area. As other reviewers have noted (Beane and Brodhagen, 2001; Jackson and Davis, 2000; Mergendoller, 1993; Cuban, 1992), the research to date varies greatly in both its methodology and its rigor. A decade ago, one scholar made the optimistic assertion that "we are coming of age in middle level research" (Strahan, 1992, p. 397). But we find even today that the research remains somewhat unfocused and inconclusive.

SREB and other reformers promote an approach to middle grades reform that draws on best practices designed to improve student achievement. These reform models call for a rigorous academic curriculum for all students; schools that are small and flexible in structure; schools that make high demands on students and provide the support students need to achieve; classrooms that build higher-order thinking skills; and parents who are actively engaged in their children's education.

In fact, while there is a strong sense that these models can yield positive achievement outcomes for middle grades students, the evidence regarding some elements of these models is surprisingly weak. As suggested earlier, a considerable amount of research documents the importance of developmental responsiveness in the middle grades, but there is little research regarding articulating and assessing strategies supporting academic excellence. Perhaps this lack of attention is due to the *paradox* encountered when examining teaching practices in the middle grades.

The Middle Grades Paradox

On the one hand, researchers describe the middle school as unique, portraying it as specially tailored to the affective and/or intellectual needs of early adolescents. Yet, many observers make recommendations (e.g. *This We Believe*) that tend to echo the recommendations of education reformers at other grade levels. For example, *Turning Points 2000* states that middle grades schools ought to "create small and caring communities for learning" — but this suggestion is no different from what high school reformers advocate for their schools. The National Staff Development Council (1999) advises middle school administrators to "gather evidence to demonstrate the impact of staff development on student achievement" — but such advice is useful for school leaders at any level. Reformers insist that the middle grades are special, yet they make many of the same recommendations as reformers in every other part of the

research and practitioner community. Middle grades reformers' findings and recommendations undermine their own premises. Instead of creating and then strengthening a distinct approach to middle grades education, reformers have identified and called for practices that are not distinct.

The strategies for improved achievement reviewed here are organized around the following themes: 1) curriculum, 2) academic climate, 3) engagement, 4) parental involvement, 5) school size and classroom structure, 6) transition to high school, and 7) teaching quality. Evidence relating to these strategies is not limited to the middle grades, but represents research support that is available for these particular reform strategies.

Curriculum

An important aspect of middle grades reform strategies involves changing the nature of curriculum and instruction. A modest body of evidence relates curriculum to student outcomes and achievement.

Accelerated Instruction — The research regarding accelerated instruction focuses on high schools, but the findings may be more broadly relevant. **To date, the preponderance of evidence shows that a demanding curriculum has intellectual and practical benefits for students of all backgrounds, races and ethnicities** (Bloom et al, 2001; Argys et al, 1996; Hallinan and Kubitschek, 1999; McPartland & Schneider, 1996; Gamoran, 1992; Sebring, 1987; Schmidt, 1983; Walberg and Shanahan, 1983). A substantial amount of research supports the importance of rigorous curricula and quality teachers for all students as the means to improving students' academic achievement. A number of studies at the high school level show that students of all backgrounds tend to benefit academically from a more rigorous curriculum (Nyberg et al, 1997; Gamoran, 1987; Sebring, 1987; Schmidt, 1983; Walberg and Shanahan, 1983; Bottoms, Hornig-Fox, & New, 2001). There is no reason to believe that grade level has any significant bearing on these findings.

An analysis of student course-taking patterns in the middle grades is one way to illustrate the changes needed to accelerate the curriculum. However, there are few studies that relate questions of course content or other aspects of the middle grades curriculum to student achievement (Vars, 2001; Allington and Johnston, 2000; LeCompte, M.D., Millroy, W.L. & Pressle, J., 1992; Sosniak and Stodolsky, 1993; Snow et al, 1991). What data we do have comes from two sources: the *National Education Longitudinal Survey of 1988* (NELS) and *The Third International Mathematics and Science Study* (TIMSS).

NELS, which surveyed a cohort of 23,000 American eighth-graders in 1988 and periodically since that time, has generated basic information about student course-taking and school-completion patterns. For instance, while most middle grade respondents indicated that they wanted to attend college, only 29 percent said they planned to take college-preparatory courses in high school (Wheelock, 1995; Epstein and MacIver, 1992). SREB's eighth-grade follow-up study of nearly 3,100 students found that 54 percent of eighth-graders who expected to graduate from college were enrolled in college-preparatory mathematics courses in ninth grade; 29 percent were enrolled in college-preparatory English classes, and only 11 percent in college-preparatory science courses. However, in middle schools and high schools that worked together to increase enrollment in a more rigorous curriculum, 80 percent of students were enrolled in high-level mathematics courses in ninth grade, 62 percent were in high-level English courses, and 43 percent were in high-level science courses (Cooney and Bottoms, 2002).

Algebra — The study of algebra, in particular, appears to serve as a gatekeeper to the college-preparatory track. Students who take algebra by the eighth or ninth grade are far more likely to take calculus in high school and pursue higher education than those who do not (Wheelock, 1995; Riley, 1997; Cooney & Bottoms, 2002). Furthermore, taking algebra seems to produce almost as much achievement gain for *low*-achieving students as for their high-achieving peers (Gamoran and Hannigan, 2000; Epstein and MacIver, 1992). Results are especially promising when "average" students take high-level classes (Mason et al, 1992). Conversely, placing students in lower-level mathematics classes has never been shown to benefit them (Hoffer, 1992). **This tends to suggest that accelerated curricula could make a difference for many middle grades students.**

Even though all signs point to the benefit of taking algebra by the eighth grade, only 20 percent of NELS respondents said they were enrolled in algebra; another 28 percent were taking pre-algebra. Results from the 2002 middle grades assessment indicate that 58 percent of eighth-graders in the SREB state middle grades network of 95 schools took "something called algebra" in the middle grades, a 25 percent increase over the 2000 data. Epstein and MacIver note that less than 20 percent of the reporting schools offered algebra to a majority of their middle grades students.

Especially troubling is the way that mathematics appears to separate the "haves" from the "have-nots." A recent study found that 14 percent of first-generation students took high school-level algebra in the eighth grade compared with 34 percent of students whose parents were college graduates (Horn et al, 2001).

Erickson and Niess (1998), in a study of 17 seventh-grade mathematics teachers, found some correlation between academic achievement and certain ways of teaching the content standards of the National Council of Teachers of Mathematics. In this study, instructional time

spent on geometry and algebra was positively related to improved mathematics achievement.

Mathematics instruction at all grade levels seems to be a key point of contrast across educational systems nationally. The TIMSS data reveal certain shortcomings of the mathematics curriculum in U.S. middle schools. For instance, American teachers attempt to cover more topics, in less depth, at a more basic level and with less coherent transitions from one lesson to the next than do their Japanese counterparts. According to Stigler and Hiebert (1998, 2000), these factors help to explain the decline in American students' performance relative to the Japanese, and they also lead to some fairly straightforward suggestions: **U.S. mathematics teachers probably need to assign fewer and more advanced topics and pursue them in greater depth.**

It is not clear, however, whether Stigler and Hiebert intend for these recommendations to apply to middle grades mathematics in particular or to mathematics education in general. The TIMSS researchers confined their study to the fourth and eighth grades because comparable sets of data for these groups are available nationally. Nowhere do they suggest that either their findings or their recommendations pertain to middle grades education per se, or to particular qualities of middle grades students.

Academic Climate

Academic press requires high expectations, concrete standards measured by an accountability system aligned with the standards, and access to an accelerated curriculum and instruction.

Standards and Accountability — In a move toward raising expectations for students and increasing the rigor of assignments and tasks in schools, states are implementing standards-based accountability systems. These systems include setting content and curriculum standards, measuring the performance of students and schools, reporting the results, and enforcing sanctions and rewards at the student and school levels. A limited amount of research suggests that performance standards and accountability systems have a positive effect on student achievement at many grade levels (Nave, Miech, & Mosteller, 2000; Stecher, Barron, Kaganoff, & Goodwin, 1998; Grissmer, Flanagan, Kawata, & Williamson, 2000; Bishop, 2000; Winfield, 1990; Borko & Elliott, 1998; and Frederiksen, 1994).

Given the degree of attention now paid to curriculum standards and accountability in all parts of K-12 education, it goes without saying that the standards movement has had some influence on the middle grades. However, the degree to which it has had an impact on *day-to-day life* in middle grades classrooms and schools is less clear (Lee, 1998). Local variations make it difficult to measure the overall impact of standards.

Currently, 32 states have clear and specific standards in language arts for the middle grades; 46 implemented mathematics and science standards; and 26 have social studies standards. To determine whether or not students are meeting these standards, some states have developed criterion-referenced assessments aligned to state standards for the middle grades. Forty-five states have language arts assessments, 40 have mathematics assessments, 21 have science assessments and 16 have social studies assessments (Education Week, 2002).

Standards are clearly popular among middle grades reformers. For instance, *Turning Points* 2000 calls for "a curriculum grounded in rigorous, public academic standards, relevant to the concerns of adolescents, and based on how students learn best." (pp. 31-32) The Council of Chief State School Officers (McClure, 1998) tells policymakers, "every middle grades school should provide a core academic program and expect every student to complete it successfully" (p. 13).

The NMSA, too, calls for something along the lines of curricular standards, but the association prefers the phrase "high expectations" (1995, 2001). The jargon associated with standards-based reform, the association argues, often leads to abstract learning objectives. What needs to be specified instead are concrete, constantly revised goals for developing both academic mastery and certain kinds of personal and social development, such as "to become intellectually engaged and to behave in keeping with responsible citizenship" (1995, pp. 15-16).

If middle grades reformers have come to agree on the need for some version of academic standards — whatever one calls them — there has been very little scholarly research on either implementing those standards or their effects in a middle grades context. To the extent that researchers have explored the use of standards at this level, they have neglected to consider whether grade level has some bearing on their findings.

For example, Kahle et al (2000) recently examined standards-based teaching practices and their effectiveness for urban African-American seventh- and eighth-grade science students. They found that a standards-based curriculum had small but positive effects on achievement and attitudes, especially for boys. They also found that certain professional development activities predicted teachers' use of a standards-based model. However, it is impossible, at this point, to say whether these findings have any relevance beyond the middle grades — for instance, such an approach could prove to be effective for boys of *all* ages or ethnicities, or effective only for *urban* students, and so on.

To date, the available research offers very little information on how standards have entered the middle grades curriculum or the impact they have had on student achieve-

ment. Presumably this may change in time, **but at this point, the connection between the implementation of standards and academic achievement rests mostly on expectations rather than clear evidence.**

Academic Press and Expectations — In a longitudinal study of 23 middle schools, Phillips (1997) found that the effort to create a highly supportive, personally engaging, "communitarian" school climate had no positive effect on mathematics achievement or even class attendance. **However, schools that created a climate of "academic press" (where student engagement in intellectual tasks and goals is emphasized, rather than personal relationships) did see gains in mathematics achievement.** Furthermore, Phillips found that eighth-grade student attendance was significantly better at schools where teachers expected most students to graduate from high school, where greater numbers of students were enrolled in algebra and where students were required to do a greater amount of homework.

Meanwhile, Hoy and Sabo (1997) found that student achievement increased in middle grades schools where teachers and administrators had stronger professional and emotional support among themselves. This suggests the possibility of some sort of "trickle-down" effect from such a climate. Also, Lepper and Hodell (1989) found that when teachers relied on threats of punishment, middle grades students were less likely to be motivated, and their academic performance decreased. This suggests that a communitarian climate may be effective. (See also Ames and Archer, 1988; Klein, Urdan & Medrich, 1998.)

Lee and Smith (1999), in what to date is the most extensive study of the middle grades climate, reported that both academic press *and* social support predict student achievement, regardless of students' backgrounds and their schools' demographics. Analyzing survey data and test scores from over 28,000 sixth- and eighth- graders in Chicago, the authors concluded that in order to succeed in schools that demand academic rigor, students need strong personal support as well. Conversely, no matter how strongly a school caters to students' affective and social needs, achievement depends on academic expectations and demands.

Educational psychologists argue that adolescents' expectations of *themselves* matter a great deal — how strongly they believe in their own abilities and how strongly they value the tasks assigned to them appears to influence academic performance (e.g., Pintrich and DeGroot 1990). For instance, Bempechat (1999) and Bempechat & Drago-Severson (1999) observe that by the time children reach the fifth or sixth grade, they tend to view their intellectual abilities as either fixed or fluid. Higher achievers tend to believe that success is related to ability; lower achievers tend to credit success to external factors, seeing only their failures as an extension of their innate abilities. Similarly, Cooney and Bottoms (2002) found that eighth-grade students who expect to graduate from college, who study "something called algebra" and who read a great number of books are more likely to take and succeed in higher-level courses in grade nine. Parents' expectations of their adolescent children's academic success also tends to predict achievement (e.g., Wiles and Bondi, 2001; Thorkildsen and Stein, 1998).

Tracking — Exposure to rigorous curricula and high standards is typically associated with the track in which students are placed (Alexander, 1996; Oakes, 1982, 1885; Vanfossen et al., 1987; Hallinan, 1996; Dauber et al, 1996). In fact, the literature on classroom grouping, while principally drawn from the high school experience, can certainly be extrapolated for the middle grades. Given extensive research documenting the positive effects of "de-tracking" (Slavin, 1993; Gamoran et al., 1997; Hallinan & Kubitschek, 1999; Argys, Brewer, & Rees, 1996) and the role tracking seems to play in perpetuating achievement gaps (Alexander, 1996; Oakes, 1982, 1985; Oakes et al, 1992; Vanfossen et al, 1987; Hallinan, 1996; Gamoran, 1987; Gamoran et al, 1997; Hoffer and Gamoran, 1993; Horn et al, 2001), it seems reasonable to conclude that tracking is a disservice to students at all levels.

It appears that middle grades schools track students in academic subjects, especially in reading and mathematics (Weiss, 1997; Valentine et al, 1993; Oakes et al, 1993; Oakes, 1990). In a review of the research on achievement and the effects of ability grouping in grades six to nine, Slavin (1993) was unable to locate any evidence showing that tracking had positive effects on achievement. Likewise, Hoffer (1992) found no positive long-term effects of placing low-ability students in low-level mathematics classes.

Some researchers argue that tracking has other adverse effects. For example, tracking interferes with middle grades students' personal development (Fuligni et al, 1995; Stevenson, 1992); has a negative effect on lower-tracked students' motivation, opportunities to learn and life chances (Mills, 1998); and perpetuates socioeconomic and racial inequities (Oakes, 1992).

Furthermore, at least two studies suggest that students can benefit from being intentionally assigned to a higher track than would otherwise be the case. Mason et al (1992) found that when 24 "average" middle grades students were placed into a high-track mathematics class, they performed at a correspondingly higher level. Indeed, several earned higher grades and test scores than their "high-achieving" classmates, and the group went on to take "substantially more advanced mathematics during high school" than the remaining "average" students (p. 597). The high-achieving students "suffered no decrease in computation or problem-solving achievement" (p. 595), and they scored higher in concepts than their cohort peer groups from pre-

vious years. In addition, the SREB eighth-grade follow-up study of 3,100 eighth-graders found that those students who were placed in higher-level courses had a lower failure rate than students with similar characteristics who were placed in lower-level courses (Cooney and Bottoms, 2002).

Engagement

When students reach the middle grades, they are more likely to question the value of what they are expected to learn. By connecting learning to the world outside of school, reformers believe that students can find meaning and motivation to do well in school.

Designing an Accessible and Relevant Curriculum — Despite the recommendations of many middle grades reformers, too many middle grades schools rarely relate academics to everyday life, social issues or the personal concerns of adolescents (Goodlad, 1984; Oakes et al, 1993). Yet, **the extent to which students' own interests are incorporated into the school program appears to be significantly related to their academic success** (Cummins, 1984, 1989; Willig, 1985). Research has also shown that incorporating community and social responsibility into the curriculum has a positive effect on achievement. Weiler et al (1998) and Stephens (1995), for example, found that middle school students who engaged in quality service-learning programs showed increases in measures of personal and social responsibility, communication, sense of educational competence, and improved problem-solving skills, as well as increased interest in academics. Supik (1996) and Rolzinski (1990) found that middle and high school students who participated in service-learning tutoring programs were not only less likely to drop out of school, but also increased their grade point averages.

Student Motivation — All teachers must contend with student apathy and disengagement. According to some researchers, this challenge looms particularly large in the middle grades. Compared with elementary and high school students, middle grades students are especially likely to report feeling bored at school, more doubtful about their ability to succeed in academics and uncertain of the value of their studies (Marks, 2000; Carnegie Council on Adolescent Development, 1995; Anderman and Maehr, 1994; Larson and Richards, 1991; Eccles and Midgley, 1989).

Not surprisingly, lower levels of engagement — where engagement refers to the student's intrinsic *motivation* to participate — tend to correspond to lower levels of achievement (Bruce and Singh, 1996; Blyth et al, 1983). The opposite seems to hold as well; high levels of engagement appear to relate positively to higher academic achievement for all populations (Finn, 1993, 1989; Finn and Rock, 1997). At all grade levels, girls are consistently more engaged than boys (Finn, 1989; Lee and Smith, 1994). Lee and Smith (1993) also found that levels of academic engagement in middle grades schools are unrelated to ethnicities.

For scholars working from within the middle schools movement, engagement means something different; they refer not merely to students' motivation to participate in some activities, but more specifically to their formation of close and supportive personal attachments (Goodenow, 1993; Arhar, 1992; Kramer, 1992). In this sense, the effort to help students become "more engaged in school" takes on another meaning, and it suggests a very different set of practices.

Of the six items the NMSA names as characteristics of developmentally responsive middle grades schools, five concern the nature and intensity of students' relationships with adults in and around the school. As described in *This We Believe* (1995), such a school is staffed by educators who "form learning partnerships with their students, demonstrating empathy while engaging them in significant academic learning experiences" (p. 13). This school staff holds students to high expectations, serving as "motivation for [them] to achieve" (p. 15); it makes sure that every student has at least one teacher or administrator who "knows and cares for that individual" (p. 16); it provides a "safe, inviting, and caring" climate (p. 18); and it helps parents find ways of "engaging in their children's learning" (p. 18).

Instructional Strategies — To date, little research has been conducted on student achievement as it relates to particular instructional practices in the middle grades (Allington and Johnston, 2000; Sosniak and Stodolsky, 1993). It is not always clear whether the existing research intends to explore specific middle grades teaching models or to test the effectiveness of broader approaches applied at this level.

In one study, for example, Wenglinsky (2000) identified classroom practices associated with high student achievement by comparing NAEP scores of eighth-graders to the classroom practices and backgrounds of their teachers. A focus on higher-order thinking skills and engagement in hands-on learning proved particularly important. Similarly, Marks (2000) found that "authentic" instruction[1] strongly predicted middle grades student engagement and, indirectly, achievement. Likewise, Epstein and MacIver (1992) found

[1]For authentic learning to be present, three criteria must be achieved: construction of knowledge, disciplined inquiry and value beyond school [as defined by Newmann (1996)]. Construction of knowledge is accomplished through task completion in which the learner has played an active role and involves the production of knowledge in the form of discourse, production of things or performance. Disciplined inquiry occurs when students use a prior knowledge base, have in-depth understanding, and integrate and use this information in new ways. Value beyond school emphasizes that students produce for an audience outside the classroom and that the work has personal value for the student.

that "rich" instruction at the middle level — when implemented in mathematics, language arts and the four major academic subjects combined — led to increased achievement and improved overall student attitudes. The use of problem-solving activities resulted in higher proficiency scores and reduced students' fear of asking questions in mathematics classes. In a small sample of sixth-grade mathematics students, the use of "manipulatives" tended to have a positive effect on achievement scores (Walsh, 2000). Epstein and MacIver (1992) found that students who edit, revise and resubmit their written compositions tend to score higher in reading achievement.

When viewed together, such studies do not appear as a coherent line of investigation or practice so much as a loose assortment of findings. Jackson and Davis (2000) describe having much the same impression:

> Even after extensive review of the literature, interviews with practitioners, and ten years' worth of formal and informal observations, we could not identify a single existing model that pulls together everything that we believe to be important in making decisions about instruction [in the middle grades] (p. 68).

In the absence of any such model, Jackson and Davis (pp. 68-85) recommend that the middle grades combine parts of three existing instructional approaches, each of which purports to address "how people learn" in general, rather than how early adolescents learn in particular. They suggest the following:

- borrowing, from Newmann, the core principles of authentic instruction (teachers should encourage students to actively "construct knowledge" for themselves, participate in "disciplined inquiry" and pursue learning that has "value beyond the school");
- adopting the assessment strategies of Wiggins and McTighe's (1998) "WHERE" framework (a conceptual tool that helps teachers reflect on their goals and methods); and
- adopting the student-centered qualities of Tomlinson's (1999) "differentiated instruction" (in which the teacher acts as a "diagnostician," tailoring an individualized teaching plan to every student).

Jackson and Davis see certain advantages to blending these three approaches into a revised *Turning Points* model of middle grades instruction. These approaches reflect the prevailing scholarly wisdom about how people learn in general, and each stresses a key aspect of teaching practice — instruction, curriculum or assessment — so that they complement each other, adding up to a coherent, comprehensive pedagogy.

Parental Involvement

The definition of parental involvement varies widely. Does it mean volunteering at school? Attending conferences? Questioning and discussing at home? Or all of these? But more importantly, how does it affect student achievement?

Research has shown that parental involvement in children's academic lives tends to decline after elementary school (Brough and Irvin, 2001; NSDC, 1998; Sanders and Epstein, 1998; Eccles and Harold, 1993) and declines again between the middle grades and high school (Epstein, 1995, 1996). However, while middle grades reformers often call for more parental contact with teachers and administrators, the research on the *effects* of parent involvement turns out to be "contradictory and inconclusive" (Brough and Irvin, 2001).

To date, most studies of parent involvement have been at the elementary school level (Balli et al, 1998; Brough, 1997; Keith et al, 1993; Rutherford and Billig, 1995; Trivette et al, 1995), and most research has focused on the behaviors of parents at home, after school hours. For instance, Desimone (1999) found a relationship between parent-initiated rules and increases in reading achievement. When students reported the existence of parental rules, reading achievement increased, but when parents reported the existence of rules, Desimone found decreases in students' reading achievement.

Epstein, Simon and Salinas (1997) found that students' academic work and attitudes improved when family members helped with their homework (see also Epstein, 1986). Similarly, Sui-Chu and Wilms (1996) found that the amount of at-home discussion of school activities was one of the stronger predictors of achievement (see Balli and Demo, 1998), and Bruce and Singh (1996) reported that family involvement in homework had a small, but direct, effect on achievement for eighth-graders surveyed in NELS:88. In general, middle grades researchers have paid little attention to parental involvement and its effect on student achievement.

School Size and Classroom Structure

School and classroom structure is another anchor point of middle grades reform.

District Size, School Size and Grade Configuration — In *Turning Points 2000*, Jackson and Davis note: "A growing body of research documents the advantages of small schools for all students, including young adolescents" (p. 124, citing Darling-Hammond, 1997). However, researchers have only begun to explore the achievement effects of school size in the middle grades.

In a study of sixth- and eighth-grade students in Chicago, Lee and Loeb (2000) found that smaller school size (they recommend enrolling fewer than 400 students)

positively influenced student achievement. Smaller school size is likely to result in better achievement because it has a positive effect on teachers' attitudes.

Mertens et al (2001) also see an indirect benefit from smaller school size in that middle grades schools with fewer than 750 students tend to have better instructional practices, more parent involvement, more common planning time for teachers and other features that seem to predict higher achievement.

On the other hand, it could be the case that, as McEwin et al (1996) suspect, the overall effectiveness of middle grades schools has far more to do with the nature of their programs, teachers, leadership, organizational plans and grouping practices. Or perhaps school size matters less than does the number of students in each grade level (Renchler, 2000). In short, middle grades school size may have some influence on student achievement, but it is not yet clear how ***much*** of a difference it makes relative to other factors.

Smaller ***district*** size may predict higher achievement, say Bickel and Howley (2000), and they find the combination of a small school and a small district promising, especially for mathematics achievement among low-income eighth-graders. But they caution that theirs is the first study to focus specifically on district size at any level, and it would be inappropriate to draw conclusions for the middle grades.

A few studies have raised the possibility that grade configuration could have an effect on student outcomes, but here too, the research is preliminary. For instance, in one literature review, Hough (1995) reports that K-to-eight schools and middle schools with sixth- to eighth-grade spans are more likely to implement "child-centered" policies and practices than are schools with seven-to-nine or seven-to-12 grade spans. Offenberg (2001) finds eighth- and ninth-grade achievement to be higher for students who attended K-to-eight schools than for those who attended middle schools serving similar communities.

Flexible Grouping and Instructional Teaming — Flexible scheduling practices and teacher collaboration have long been seen as hallmarks of the "middle school model." However, the research literature remains inconclusive as to the model's impact on academic achievement.

As Cobb et al (1999) note, researchers have only just begun to collect data on the effects of scheduling systems in general. Their own research on the effects of a 4X4 block schedule on junior high school achievement scores in several subjects is the first attempt to focus specifically on the effects of block scheduling in the middle grades. They warn that their study provides no definitive findings and its purpose is merely to set the stage for further investigations.

Instructional teaming by middle grades teachers, on the other hand, has received a good deal more attention from researchers (e.g., Arhar, 1990, 1992, 1994; Arhar and Kromrey, 1993, 1995; Kain, 2001; Dickinson and Erb, 1997). In fact, some now see a preponderance of evidence in support of teaming, especially *interdisciplinary* teaming. For instance, using data from a multi-year survey of teachers, administrators and students in 155 schools, Flowers, Mertens, and Mulhall (2000) found that

> schools engaged in interdisciplinary teaming have a more positive school climate, have more frequent contact with parents, have higher job satisfaction among teachers, and report higher student achievement scores than non-teaming schools (p. 53; see also Mertens et al, 2001; Brown, 2001; Flowers et al, 1999; Raebeck, 1992).

Further, say Flowers and her colleagues, interdisciplinary teaming seems to have the most positive effect when teachers meet often throughout the school year, when they openly discuss their goals and when they plan curricula for a relatively small group of students (i.e., fewer than ninety). Common planning time, in particular, appears to be a key factor — and many other researchers have reported this finding as well (e.g., Erb and Stevenson, 1999; Steffes and Valentine, 1996; Warren and Muth, 1995; Mills, 1995, 1994; McQuaide; 1994; Shaw; 1993; Hart et al, 1992; Mills and Ohlhausen, 1992). However, it appears that very few middle grades schools provide teachers with any planning time at all, much less time in common (e.g., Felner et al, 1997; Strahan et al, 1997; Epstein and MacIver, 1990).

If we discount teachers' impressions, we find little evidence of a causal relationship between instructional teaming and student achievement. As Beane (2001a) puts it, "research reviews ... indicate that students in schools that have team organization tend to evidence higher academic achievement than those in schools that use a traditional departmentalized organization" (p. 1162). This means that there seems to be an ***association*** between teaming and achievement; it does not suggest that teaming will lead to an increase in achievement in any given school.

Transition to High School

The tripartite schooling organization, which is the norm in most parts of the country, requires that students make at least two transitions within the K-12 system. Most critics point out that student achievement often lags the year after the transition to a new school.

Transition Patterns — The research on school transitions — from elementary to middle grades and from middle grades to high school — reveals patterns that seem to affect student achievement and that may relate to student engagement. After the transition to high school, especially, students' grade point averages and attendance often decline

(Barone et al., 1991; Reyes et al, 1994), and the transition tends to be more difficult for those who did not perform well in the middle grades.

Of those students who have multiple risk factors in the eighth grade, only 60 percent graduate from high school on time (compared to 90 percent rate for other students; NCES, 1996), and as many as six percent drop out of school by the end of 10th grade (Owings and Peng, 1992). Among 14 to 15 year-olds who struggle with basic reading and mathematics skills, 20 percent drop out of school within two years, according to one study (Berla et al, 1989). Low-achieving eighth-grade science students are 25 percent less likely to take four years of high school science, almost 70 percent less likely to take chemistry and 75 percent less likely to take physics (Haycock and Ames, 2000). In short, students who under-perform in the middle grades tend to find it extremely difficult to make a successful transition to high school-level studies (Cooney and Bottoms, 2002).

In trying to account for these patterns, researchers have mostly looked into the emotional and social — rather than the academic — adjustments associated with school transition. Declines in achievement tend to be attributed to lower levels of engagement in middle or high school. Specifically, new high school students find themselves in a larger, less personal and more competitive setting. Grades become more important than relationships; teachers and peers become more diverse; and curricular and extracurricular activities become more demanding (Feldlaufer et al, 1988). All of this seems to interfere with social networks, self-confidence and support systems (Barone et al, 1991; Hertzog et al, 1996).

Transitional Programs — Transitional programs may help students successfully adapt to the middle or high school environment. For example, in a follow-up report on low-income students making the transition to a large, urban high school, Felner et al (1993) found that a special counseling program led to a 50 percent reduction in dropout rates, as well as significant gains in school performance and attendance patterns.

Furthermore, Hertzog and Morgan (1999), in a study of 56 Georgia and Florida high schools, found that schools that offered extensive transition programs had significantly lower failure and dropout rates than those that did not offer such programs. The authors concluded that the best programs were those that included a variety of activities, particularly counseling, school visits and special summer courses to help introduce students to the new environment.

Schiller (1999) found that the stability of the student's peer group also tends to have some effect on achievement. In his study, high-achieving middle grades students earned better grades if they attended the same high school as *many* of their middle grades classmates. The opposite was found for low-achieving middle grades students — they tended to receive better grades if they attended a high school with *fewer* classmates from their middle grades school.

Finally, Alspaugh (1998) found that a double transition (where the student moves from elementary to middle and then from middle to high school) resulted in a greater achievement loss and higher dropout rates than did a single transition (from a K-to-eight school to high school).

Teacher Quality

Curriculum and instruction supported by high expectations represent one anchor point of the middle grades; school size and classroom structure are a second point; and the third supporting point is teacher quality determined by their content knowledge and their effective teaching practices.

Teacher Effectiveness — Recent findings on outcomes related to teachers' academic preparation and licensure support the belief that an effective teacher has a great deal of control over students' learning. There are a few studies that link teacher quality and student achievement, though not specifically in the middle grades. Sanders and Rivers (1998) found that students in classes with "effective" teachers had greater achievement gains than students in classes with the least effective teachers. This finding was replicated in the Dallas public schools, where reading and mathematics scores for students were found to be dependent on teacher quality (Jordan, Mendro, & Weerasinghe, 1997). Boston Public Schools (1998) found that 10th-graders whose average scores were roughly the same increased or decreased their scores as a result of effective or ineffective teachers, respectively.

Subject-area Training — These studies do not describe the qualities of an effective teacher, but other research addresses them. For example, Goldhaber & Brewer (1996) evaluated the effect of teacher degree-level on education performance using data from National Educational Longitudinal Study of 1988 (NELS). They found that some teacher characteristics have a strong effect on student achievement. For example, teachers who are certified in and have either B.A. or M.A. degrees in mathematics are associated with higher student test scores in mathematics than other teachers. Similarly, teachers with bachelors degrees in science are associated with higher student test scores in science. Degrees in English and history did not affect students' test scores in these areas. Thus they determined that it is subject-specific training rather than teacher ability that leads to these findings.

Later, Goldhaber & Brewer (2000) studied 12th-grade students with teachers who have probationary certification, emergency certification, private school certification or no certification in their subject area. They compared them to students whose teachers had standard certification in their

subject area (math and science). Results showed that in mathematics, teachers who had a standard certification had a statistically significant positive impact on student test scores relative to teachers who either held private school certification or no certification in their subject area. Mathematics and science students who had teachers with emergency credentials did no worse than students whose teachers had standard teaching credentials. In addition, Ferguson (1997) found a significant positive relationship between teacher test scores on a basic literacy examination and their students' performance on the Iowa Test of Basic Skills. Darling-Hammond (1999), using the SASS, NAEP, and a 50-state survey of policies and state case-study analyses, found that policy investments in teacher quality may be related to improvements in student performance. Measures of teacher preparation and certification are by far the strongest correlates of student achievement in reading and mathematics, both before and after controlling for student poverty and language status.

Encouraging Links among Research, Practices and Strategies

Finding a research base to support policy and practice requires a considerable leap of faith and remains a serious dilemma in the middle grades. When we began this review, we expected to find that the middle grades literature would provide strong evidence of successful strategies for improving student achievement. We hoped that the research would firmly support certain educational practices and cast doubt on others. Contrary to the assumption that drives much of middle grades research and reform literature, promoting achievement in the middle has more in common with successful strategies applied at other grade levels than not.

Louis (2000) summarizes our findings when she points to the Carnegie Corporation's 1996 report and says, "These are commendable recommendations although it is hard to see why they are applicable only to students in the middle grades" (p. 111). Louis follows this by pointing to research by Hoy and Hannum (1997) that found that similar school climate instruments can measure both healthy high schools and middle schools. Lee and Smith (1993) found that smaller learning communities in both high schools and middle schools can have positive effects on achievement. According to Mizell, "until more schools adopt a vision that captures the interaction between students' personal and intellectual development, educators will not have the consensus of conviction and action necessary to improve student learning" (National Educational Research Policy and Priorities Board, 2000, p. 14).

However, the question is not *whether* middle grades students are different; rather, the question is one of scale: *How* different are they? Are they different in ways that demand an entirely distinct way of teaching and learning? Or are they different in ways that suggest adjustments to teaching and learning that we would like to see used at all grade levels?

This We Believe, *Turning Points* and other middle grades reform proposals offer recommendations somewhat similar to those made by elementary, secondary and adult educators. They infer that there is nothing fundamentally distinct about educating these students. Without doubt the typical middle grades student bears some important differences from the typical third- or twelfth-grade student. Early adolescence is a particularly tumultuous period of life in which young people struggle to shape their own identities, to become secure in their changing bodies, and to explore a range of new roles and responsibilities. Of course, teachers should be responsive to the differing needs of these students — just as they should be responsive to the differing needs of students in elementary schools, rural schools, career/technical programs or any other setting. Early adolescents have the same educational needs and capacities as everyone else. Just like the rest of us, they ought to be intellectually challenged, emotionally supported, respected, rewarded and held to high standards.

Fostering improved student achievement is our objective, and unless faced with a compelling reason to believe that what works *in the middle grades* is radically different from what works *in general*, it is not clear why the education reform agenda must be carved up by grade level.

SREB supports a comprehensive improvement framework designed to improve student achievement in the middle grades and to transition them to the larger educational system. Broadly speaking, the framework demands strengthened curricula, a modified school organization and practices, increased demands on students with essential support provided, improved teacher quality, and the inclusion of parents and community in the learning process. Some evidence supports SREB's framework, but the research link to the concepts driving SREB's strategies remains inadequate.

Ongoing research efforts are needed to identify effective practices in a systematic, methodologically rigorous way. If we wish to influence practitioners, the task is even more daunting. Primarily we need to know the following:

- What does a challenging academic curriculum that results in more students who are prepared for a rigorous high school program look like?
- Does an accelerated academic curriculum along the lines proposed by several reform groups and SREB represent a reasonable approach to improving achievement in the middle grades?
- Are there instructional practices that are directly linked to higher student engagement and achievement (we have some clues from research on contextual teaching and learning)?
- Why are grades five to eight the least popular teaching assignment and how can stronger teachers, well grounded in subject area mastery, be attracted to and retained in middle grades instruction?
- Why do many teachers, parents and others hold low expectations for middle grades students and what can be done to change it?
- Why do the middle years tend to be a time of declining parent involvement in the schools and what can be done to bolster parents' roles?

These are not simple questions — and they beg to be answered. Given the federal government's renewed effort to encourage evidence-based research as a backdrop to reform, the time is right to develop a systematic agenda intended to test assumptions now supported by modest research findings.

While we wait for these and other questions to be answered through well-designed research studies, middle grades teachers and schools should ask questions about teaching and learning and seek answers from their student achievement data. Successful schools use data to initiate and continue improvement in school and classroom practices and to raise student achievement. High-performing schools help teachers examine what is working and what is not, and they encourage them to find answers in their own classrooms. Teacher study groups should use data and the professional research literature to develop recommendations for change in their schools.

Middle grades students cannot wait for the perfect study or series of studies. They need to be prepared for high school and beyond using the best evidence currently available. Over time, both scientific and action research will determine with greater certainty what contributes to superior teaching and learning in the middle grades.

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Making Middle Grades Work

Goal

- Increase the percentages of eighth-graders who perform at the basic and proficient levels in academic subjects.

Comprehensive Improvement Framework

- **An academic core that is aligned to what students must know, understand and be able to do to succeed in college-preparatory English, mathematics and science** — All students in the middle grades need an academic core curriculum that accelerates their learning, challenges them and appeals to their interests.
  - In mathematics, all students satisfactorily complete Algebra I or pass a pre-algebra test of proficiency and use algebra concepts to reason and solve problems.
  - In science, all students use laboratory and technology experiences to learn scientific concepts in physical, life and earth/space sciences.
  - Reading instruction is incorporated into all content areas in the academic core curriculum through grade eight.
  - The language arts curriculum requires students — before they leave eighth grade — to use language correctly and effectively to find, organize and communicate information.
  - The social studies curriculum requires students — before they leave eighth grade — to describe their heritage, their government, their world and economic principles through key issues of the past, present and future.
- **A belief that all students matter** — Each student needs to have a personal relationship with an adult who takes an interest in his or her successful learning, goal-setting, educational planning and personal growth.
- **High expectations and a system of extra help and time** — Students learn in different ways and at different rates. Middle grades students need enough time and help to meet more rigorous, consistent standards for all eighth-graders. The middle grades curriculum should accelerate achievement for all students.
- **Classroom practices that engage students in their learning** — Young adolescents need varied learning activities linked to challenging academic content and opportunities to use new skills and concepts in real-world applications.
- **Teachers working together** — All teachers need time to plan together, to develop and coordinate learning activities, and to share student work that meets proficiency standards.
- **Support from parents** — Parents must understand clearly and must support the higher standards for performance in the middle grades.
- **Qualified teachers** — Middle grades teachers must know academic content and how to teach young adolescents.
- **Use of data** — States, districts and schools continuously must use data on student, school and teacher performance to review and revise school and classroom practices as needed.
- **Use of technology for learning** — Middle grades students and teachers must have opportunities to explore and use technology to improve knowledge and skills in English/language arts, reading, mathematics, science and social studies.
- **Strong leadership** — Middle grades schools need strong, effective principals who encourage teachers and participate with them in planning and implementing research-based improvements.

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Southern Regional Education Board Goals for Education

1. All children are ready for the first grade.
2. Achievement in the early grades for all groups of students exceeds national averages and performance gaps are closed.
3. Achievement in the middle grades for all groups of students exceeds national averages and performance gaps are closed.
4. All young adults have a high school diploma — or, if not, pass the GED tests.
5. All recent high school graduates have solid academic preparation and are ready for postsecondary education and a career.
6. Adults who are not high school graduates participate in literacy and job-skills training and further education.
7. The percentage of adults who earn postsecondary degrees or technical certificates exceeds national averages.
8. Every school has higher student performance and meets state academic standards for all students each year.
9. Every school has leadership that results in improved student performance — and leadership begins with an effective school principal.
10. Every student is taught by qualified teachers.
11. The quality of colleges and universities is regularly assessed and funding is targeted to quality, efficiency and state needs.
12. The state places a high priority on an education system of schools, colleges and universities that is accountable.

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